

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
6 November 2003 (06.11.2003)

PCT

(10) International Publication Number
WO 03/092323 A1

(51) International Patent Classification⁷: **H04R 9/02**

(21) International Application Number: PCT/IB03/01159

(22) International Filing Date: 20 March 2003 (20.03.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02076650.7 25 April 2002 (25.04.2002) EP

(71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

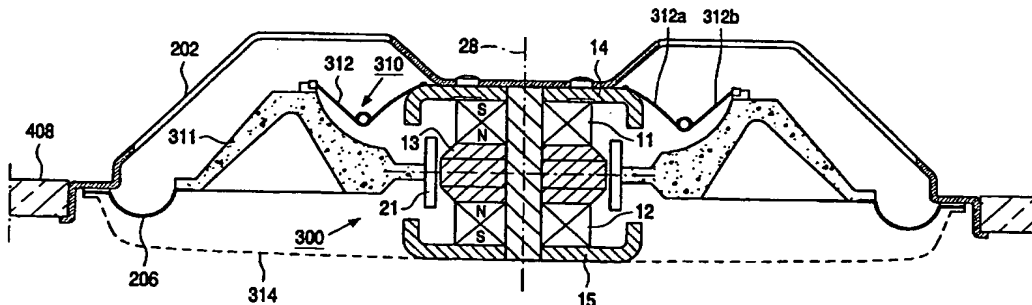
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **ELECTROMAGNETIC DRIVING UNIT FOR A LOUDSPEAKER ASSEMBLY**



(57) **Abstract:** Electromagnetic driving unit for a loudspeaker assembly provided with a frame (202) and a diaphragm (31). The driving unit comprises a magnet part and a coil part (21) for magnetic cooperation with the magnet part, the coil part being translatable along a translation axis with respect to the magnet part. The diaphragm (31) may extend from the coil part in a substantially radial direction with respect to the translation axis (23) of the coil part. The magnet part comprises two permanent magnets (11, 12) and an intermediate magnetic pole element (13) which is sandwiched between the permanent magnets when viewed along the translation axis of the coil part. In order to improve the efficiency of the driving unit, the magnet part further comprises two external magnetic pole elements (14, 15). The permanent magnets and the intermediate magnetic pole element are sandwiched between the external magnetic pole elements, all pole elements having pole faces which are magnetically directed towards the coil part.

WO 03/092323 A1